

Amendments to the Claims

This application claims the benefit of the filing date of U.S. Provisional Application Serial No. 60/395,803, filed July 16, 2002.

Please insert the following on page 42, line 18:

Brief Description of Drawings:

- Figure 1 illustrates images 1 and 2, which show MR images of the pelvic region 24 hours after intravenous administration of 0.1 mmol of Gd/kg of body weight of the compound according to the invention in the PIT rabbit (photochemically induced thrombus).
- Figure 2 illustrates images 3 and 4, which show that with both staining techniques (HE and PTAH), the red blood clots (thrombi) could be detected in the area of the left femoral vein.
- Figure 3 illustrates images 5 and 7, which show that in the ex-vivo MR imaging, a considerable enhancement of the thrombi can be observed with the T1-weighted spin echo sequence.

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended): ~~Use of~~ A method of MR imaging for visualization of intravascular thrombi comprising using, as contrast media for visualization, perfluoroalkyl-containing metal complexes that have a critical micelle formation concentration $< 10^{-3}$ mol/l, a hydrodynamic micelle diameter ($2 R_h$) > 1 nm and a proton relaxivity in plasma (R^1) > 10 l/mmol.s ~~as contrast media in MR imaging for visualization of intravascular thrombi.~~

Claim 2 (currently amended): ~~Use~~ A method according to claim 1, ~~characterized in that~~ wherein the metal complexes are used as MRI contrast media for visualization of venous thrombi.

Claim 3 (currently amended): ~~Use~~ A method according to claim 1, wherein the metal complexes are used as MRI contrast media for visualization of arterial thrombi.

Claim 4 (currently amended): ~~Use~~ A method according to claim 1, wherein the metal complexes are used as MRI contrast media for early determination of a thrombotic occlusive vascular disease.

Claim 5 (currently amended): ~~Use~~ A method according to claim 1, wherein the metal complexes ~~whose~~ have a micelle formation concentration is of $< 10^{-4}$ mol/l ~~are used.~~

Claim 6 (currently amended): ~~Use~~ A method according to claim 1, wherein the metal complexes ~~whose~~ have a hydrodynamic micelle diameter is ≥ 3 nm, ~~preferably > 4 nm, are used.~~

Claim 7 (currently amended): ~~Use A method~~ according to claim 1, wherein the metal complexes ~~that~~ have a proton relaxivity in plasma of > 13 l/mmol.s, ~~preferably > 15 l/mmol.s,~~ are used.

Claim 8 (withdrawn and currently amended): ~~Use A method~~ according to claim 1, wherein as the perfluoroalkyl-containing metal complexes, ~~the compounds of general~~ are of formula I

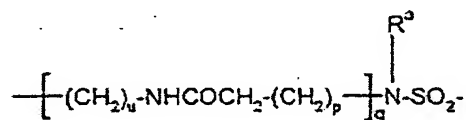


in which

R^F is a perfluorinated, straight-chain or branched carbon chain with formula $-C_nF_{2n}E$,
in which

E represents a terminal fluorine, chlorine, bromine, iodine or hydrogen atom
and n stands for numbers 4-30,

L means a direct bond, a methylene group, an -NHCO group, a group



~~whereby~~ wherein p means the numbers 0 to 10, and q and n, independently of one another, mean numbers 0 or 1, and

R^a is a hydrogen atom, a methyl group, a benzyl group, a phenyl group, a $-CH_2-OH$ group, a CH_2OCH_3 group, a $-CH_2-CO_2H$ group or a C_2-C_{15} chain, which optionally is interrupted by 1 to 3 oxygen atoms, 1 to 2 $>CO$ groups or an optionally substituted aryl group and/or is substituted with 1 to 4 hydroxyl groups, 1 to 2 C_1-C_4 alkoxy groups, 1 to 2 carboxy groups, a group $-SO_3H$ -,

or is a straight-chain, branched, saturated or unsaturated C_2-C_{30} carbon chain, which optionally contains 1 to 10 oxygen atoms, 1 to 3 $-NR^a$ groups, 1 to 2 sulfur

atoms, a piperazine, a $-\text{CONR}^a$ group, one to six $-\text{NR}^a\text{CO}$ groups, an $-\text{SO}_2$ group, an $-\text{NR}^a-\text{CO}_2$ group, 1 to 2 CO groups, a group

$-\text{CO}-\text{N}-\text{T}-\text{N}(\text{R}^a)-\text{SO}_2-\text{R}^F$, or 1 to 2 optionally substituted aryls and/or is interrupted

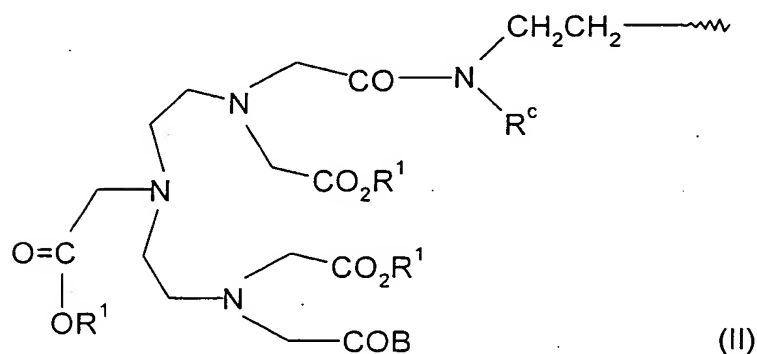
by these groups and/or is optionally substituted with 1 to 3 $-\text{OR}^a$ groups, 1 to 2 oxo groups, 1 to 2 $-\text{NH}-\text{COR}^a$ groups, 1 to 2 $-\text{CONHR}^a$ groups, 1 to 2 $-(\text{CH}_2)_p-\text{CO}_2\text{H}$ groups, 1 to 2 groups $-(\text{CH}_2)_p-(\text{O})_q-\text{CH}_2\text{CH}_2-\text{R}^F$,

whereby wherein

R^a , R^F and p and q have the above-indicated meanings, and

T means a C_2-C_{10} chain, which optionally is interrupted by 1 to 2 oxygen atoms or 1 to 2 $-\text{NHCO}$ groups,

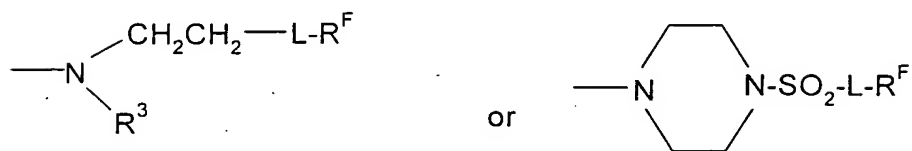
K stands for a complexing agent or metal complex or ~~their salts of a salt thereof with~~ an organic and/or inorganic bases base or amino acids acid or amino acid amides amide, specifically for a complexing agent or complex of general formula II



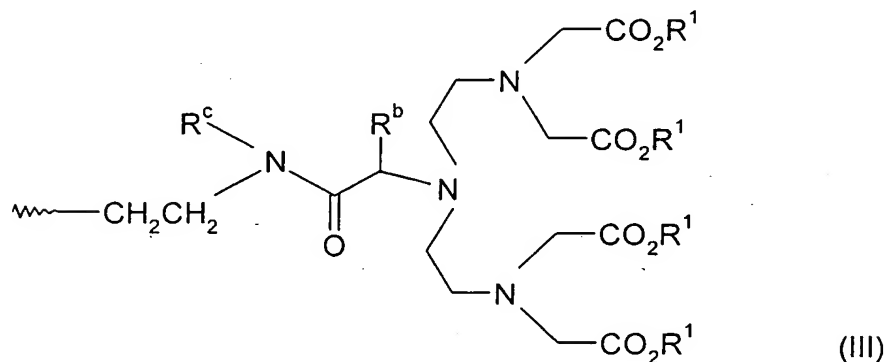
in which R^c , R^1 and B are independent of one another, and

R^c has the meaning of R^a or means $-(\text{CH}_2)_m-\text{L}-\text{R}^F$, ~~whereby~~ wherein m is 0, 1 or 2, and L and R^F have the above-mentioned meaning,

B means -OR¹ or

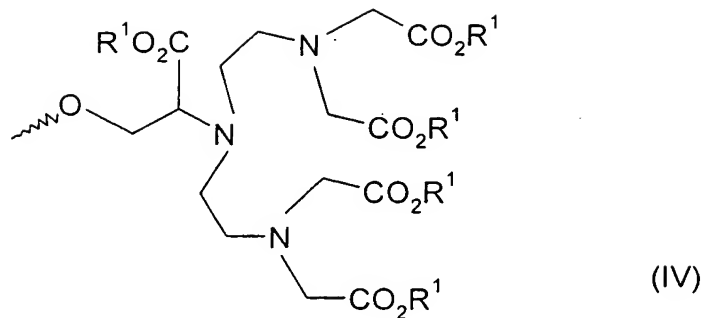


K stands for a complexing agent or complex of general formula III



or

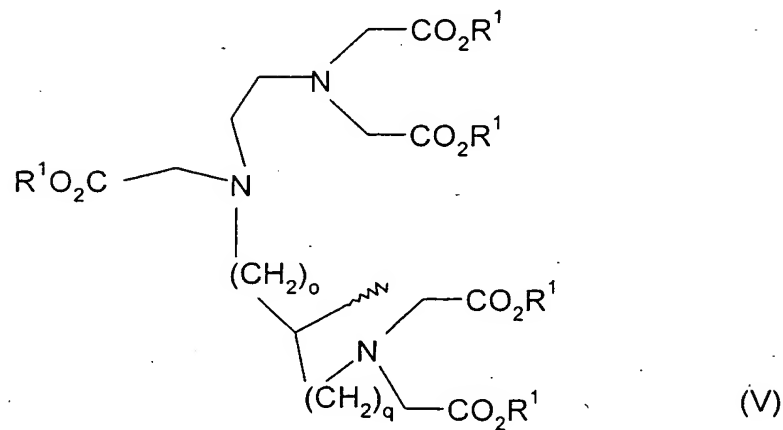
K stands for a complexing agent or complex of general formula IV



in which R^1 has the above-mentioned meaning

or

K stands for a complexing agent or complex of general formula V



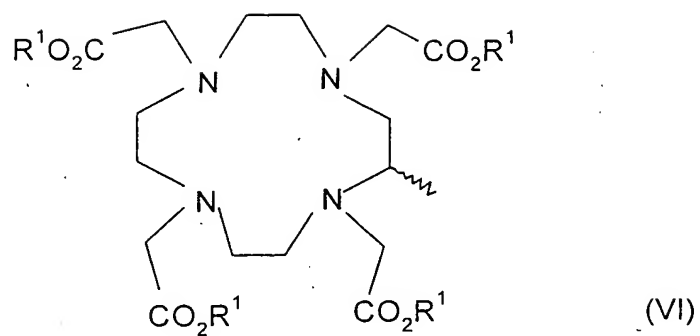
in which R^1 has the above-mentioned meaning, and o and q stand for numbers 0

or

1, and yields the sum $o + q = 1$,

or

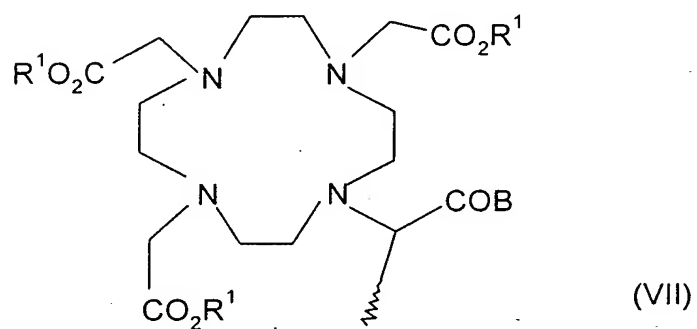
K stands for a complexing agent or complex of general formula VI



in which R^1 has the above-mentioned meaning

or

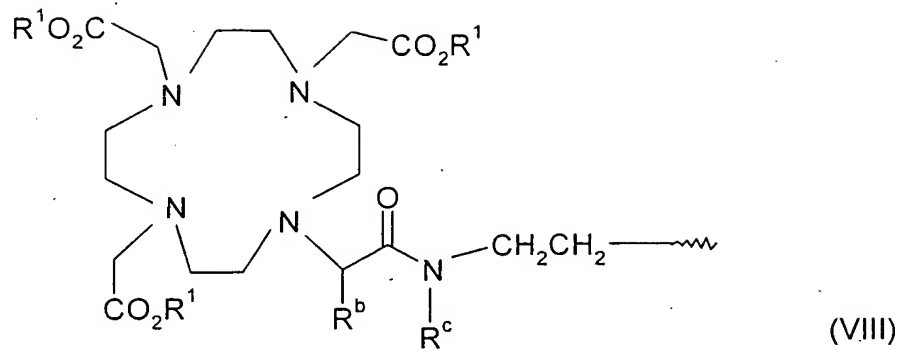
K stands for a complexing agent or complex of general formula VII



in which R^1 and B have the above-mentioned meanings

or

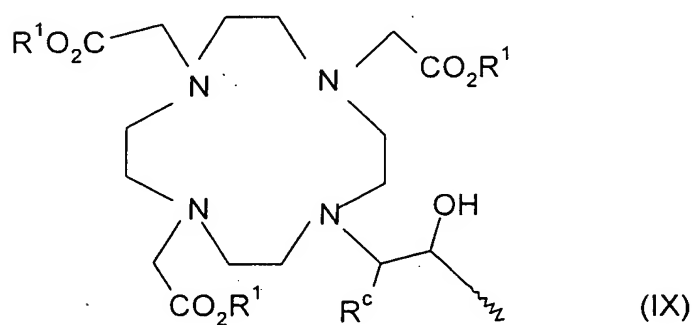
K stands for a complexing agent or complex of general formula VIII



in which R^c , and R^1 have the above-mentioned meanings, and R^b has the above-mentioned meaning of R^a

or

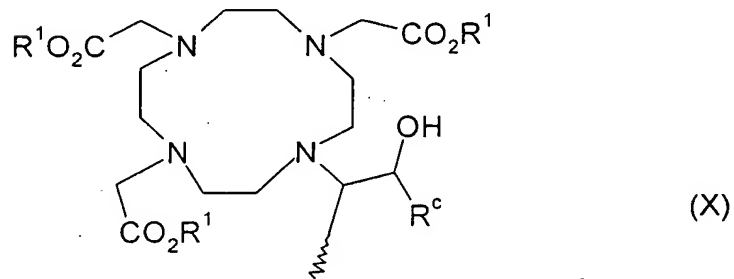
K stands for a complexing agent or complex of general formula IX



in which R^c and R^1 have the above-mentioned meanings,

or

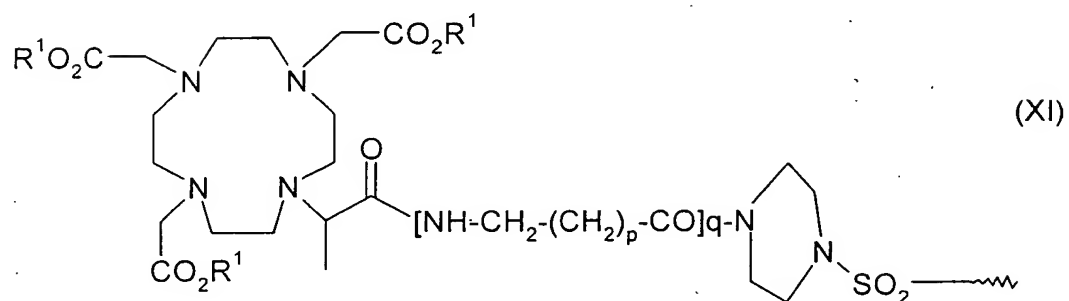
K stands for a complexing agent or complex of general formula X



in which R^c and R^l have the above-mentioned meanings,

or

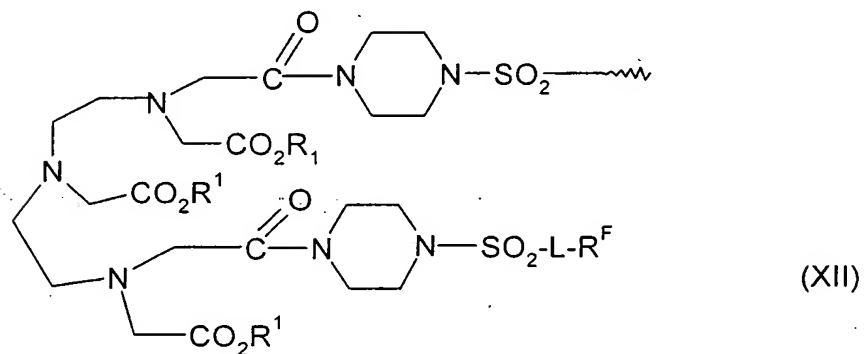
K stands for a complexing agent or complex of general formula XI



in which R^l , p and q have the above-mentioned meanings, and R^b has the meaning of R^a ,

or

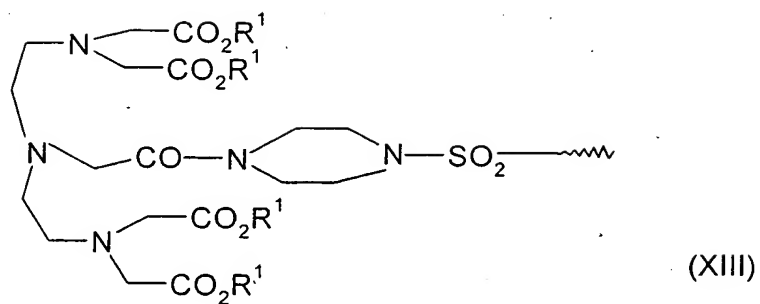
K stands for a complexing agent or complex of general formula XII



in which L , R^F and Z^l have the above-mentioned meanings,

or

K stands for a complexing agent or complex of general formula XIII



in which R¹ has the above-mentioned meaning, ~~are used.~~

Claim 9 (withdrawn and currently amended): Use A method according to claim 8, wherein in the compounds of general formula I, ~~in which~~ L stands for one of the following

α -CH₂- β
 α -CH₂CH₂- β
 α -(CH₂)_s- β s = 3 - 15
 α -CH₂-O-CH₂CH₂- β
 α -CH₂-(O-CH₂-CH₂-)_t- β t = 2 - 6
 α -CH₂-NH-CO- β
 α -CH₂-NH-CO-CH₂-N(CH₂COOH)-SO₂- β

$$\alpha - \text{CH}_2 - \text{O} - \text{C}_6\text{H}_3(\text{COOH}) - \text{CH}_2 - \text{O} - \text{CH}_2 - \text{CH}_2 - \beta$$

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α -CH₂-O-C₆H₄-O-CH₂-CH₂- β
 α -CH₂-C₆H₄-O-CH₂-CH₂- β
 α -N(C₂H₅)-SO₂- β
 α -N(C₆H₅)-SO₂- β
 α -N(C₁₀H₂₁)-SO₂- β
 α -N(C₆H₁₃)-SO₂- β
 α -N(C₂H₄OH)-SO₂- β
 α -N(CH₂COOH)-SO₂- β
 α -N(CH₂C₆H₅)-SO₂- β
 α -N-[CH(CH₂OH)₂]-SO₂- β
 α -N-[CH(CH₂OH)CH(CH₂OH)]-SO₂- β

and in which α represents the binding site to the complexing agent or metal complex K, and β represents the binding site to the fluorine radical, ~~are used.~~

Claim 10 (withdrawn and currently amended): Use A method according to claim 8, wherein in the compounds of formula I, ~~in which~~ n in formula -C_nF_{2n}E stands for numbers 4-15 and/or E in this formula means a fluorine atom ~~are used.~~

Claim 11 (withdrawn and currently amended): Use A method according to claim 8, wherein one of the following ~~compounds complexes~~ are used:

- Gadolinium complex of 10-[1-methyl-2-oxo-3-aza-5-oxo-{4-perfluorooctylsulfonyl-piperazin-1-yl}-pentyl]-1,4,7-tris(carboxymethyl)-1,4,7,10-tetraazacyclododecane,
- Gadolinium complex of 10-[2-hydroxy-4-aza-5-oxo-7-oxa-10,10,11,11,12,12,13,13,14,14,15,15,16,16,17,17-heptadecafluoroheptadecyl]-1,4,7-tris(carboxymethyl)-1,4,7,10-tetraazacyclododecane,
- Gadolinium complex of 10-[2-hydroxy-4-aza-5,9-dioxo-9-{4-perfluorooctyl}-piperazin-1-yl]-nonyl]-1,4,7-tris(carboxymethyl)-1,4,7,10-tetraazacyclododecane,

- Gadolinium complex of 10-[2-hydroxy-4-aza-5-oxo-7-aza-7-(perfluorooctylsulfonyl)-nonyl]-1,4,7-tris(carboxymethyl)-1,4,7,10-tetraazacyclododecane,
- Gadolinium complex of 10-[2-hydroxy-4-oxa-1H,1H,2H,3H,3H,5H,5H,6H,6H-perfluorotetradecyl]-1,4,7-tris(carboxymethyl)-1,4,7,10-tetraazacyclododecane,
- Gadolinium complex of 10-[2-hydroxy-4-aza-5-oxo-7-oxa-10,10,11,11,12,12,13,13,14,14,15,15,16,16,17,17,18,18,19,19-henicosafuorononadecyl]-1,4,7-tris(carboxymethyl)-1,4,7,10-tetraazacyclododecane,
- Gadolinium complex of 10-[2-hydroxy-4-aza-5-oxo-11-aza-11-(perfluorooctylsulfonyl)-tridecyl]-1,4,7-tris(carboxymethyl)-1,4,7,10-tetraazacyclododecane,
- Gadolinium complex of 10-[2-hydroxy-4-aza-5-oxo-7-aza-7-(perfluorooctylsulfonyl)-8-phenyl-octyl]-1,4,7-tris(carboxymethyl)-1,4,7,10-tetraaza-cyclododecane.

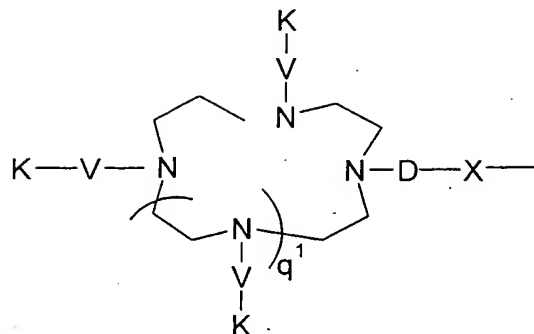
Claim 12 (currently amended): Use A method according to claim 1, wherein as the perfluoroalkyl-containing metal complexes, ~~the compounds of general~~ are of formula Ia



in which

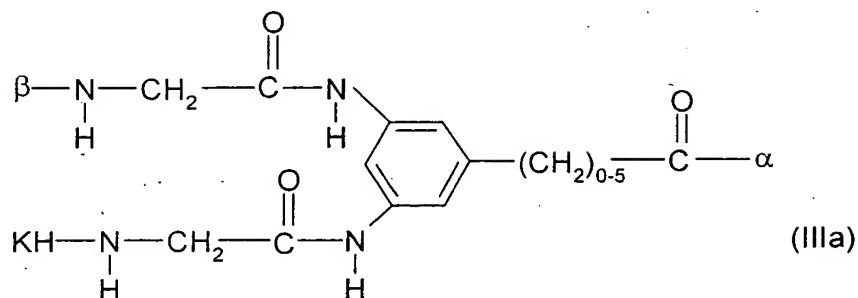
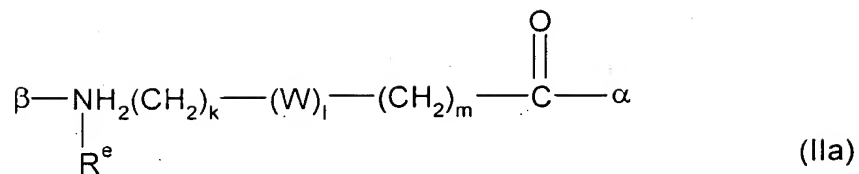
- A is a molecule part that contains 2 to 6 metal complexes, which are bonded directly or via a linker to a nitrogen atom of an annular skeleton chain, and
- R^F is a perfluorinated, straight-chain or branched carbon chain with formula $-C_nF_{2n}E$, in which
E represents a terminal fluorine, chlorine, bromine, iodine or hydrogen atom, and n stands for numbers 4-30,

~~whereby~~ wherein molecule part A has the following structure:



whereby wherein

- q^1 is a number 0, 1, 2 or 3,
- K stands for a complexing agent or metal complex or ~~their salts of~~ a salt thereof with an organic and/or inorganic ~~bases~~ base or ~~amino acids~~ acid or amino acid ~~amides~~ amide,
- X is a direct bond to the perfluoroalkyl group, a phenylene group or a C_1 - C_{10} -alkylene chain, which optionally contains 1-15 oxygen atoms, 1-5 sulfur atoms, 1-10 carbonyl groups, 10-10 (NR^d) groups, 1-2 NR^dSO_2 groups, 1-10 $CONR^d$ groups, 1 piperidine group, 1-3 SO_2 groups and 1-2 phenylene groups or optionally is substituted by 1-3 radicals R^F , in which R^d stands for a hydrogen atom, a phenyl group, benzyl group or a C_1 - C_{15} alkyl group, which optionally contains 1-2 $NHCO$ groups, 1-2 CO groups, or 1-5 oxygen atoms and optionally is substituted by 1-5 hydroxy, 1-5 methoxy, 1-3 carboxy, or 1-3 R^F radicals,
- V is a direct bond or a chain of general formula IIa or IIIa:



in which

[[■]] R^e is a hydrogen atom, a phenyl group, a benzyl group or a C_1 - C_7 -alkyl group, which optionally is substituted with a carboxy group, a methoxy group or a hydroxy group,

[[■]] W is a direct bond, a polyglycol ether group with up to 5 glycol units, or a molecule part of general formula IVa



in which R^h is a C_1 - C_7 carboxylic acid, a phenyl group, a benzyl group or a $(\text{CH}_2)_{1-5}$ -NH-K group,

[[■]] α represents the binding to the nitrogen atom of the skeleton chain, β represents the binding to complexing agents or metal complex K,

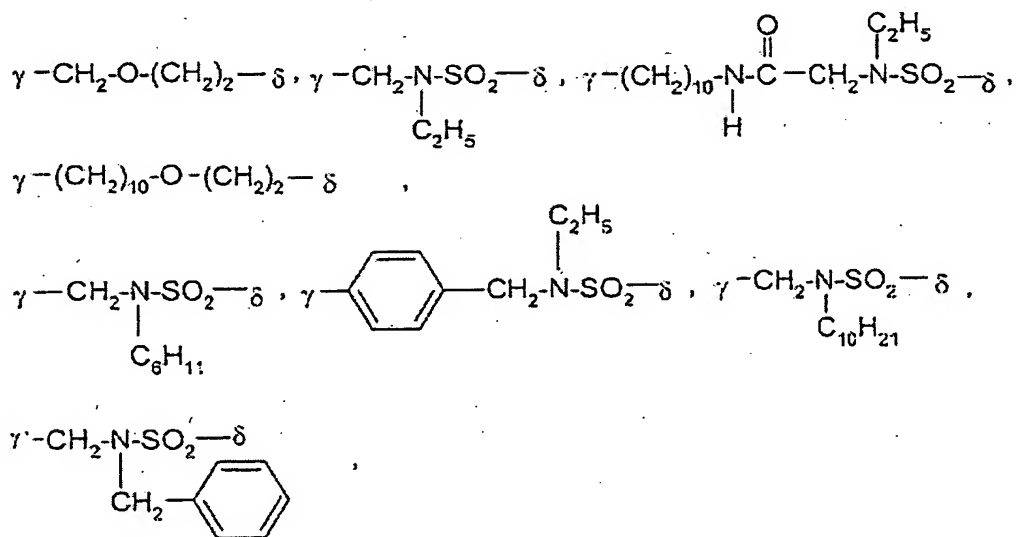
[[■]] and in which variables k and m stand for natural numbers between 0 and 10, and l stands for 0 or 1

and ~~whereby~~ wherein

[[•]] D is a CO or SO₂ group, ~~are used.~~

Claim 13 (currently amended): ~~Use A method~~ according to claim 12, wherein in the compounds of general formula Ia₁ ~~in which q is the number 1 are used.~~

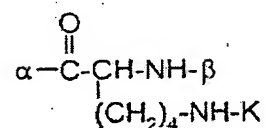
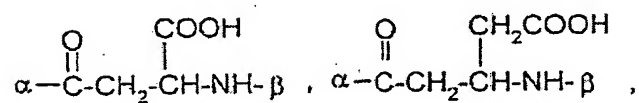
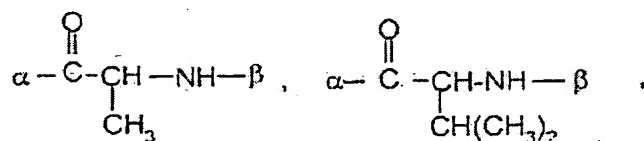
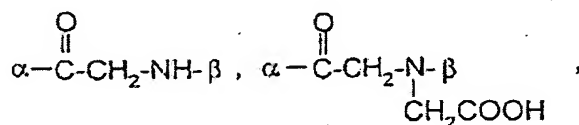
Claim 14 (currently amended): ~~Use A method~~ according to claim 12, wherein in the compounds of general formula Ia₁ ~~are used, in which~~ molecule part X is an alkylene chain, which contains 1-10 CH₂CH₂O groups or 1-5 COCH₂NH groups, a direct bond or one of the following structures



~~whereby~~ wherein

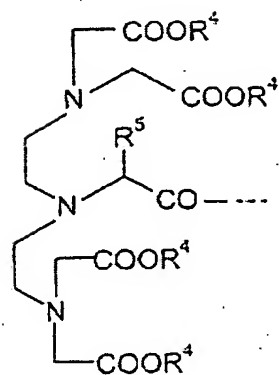
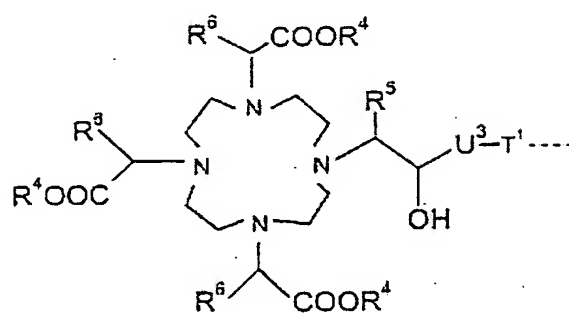
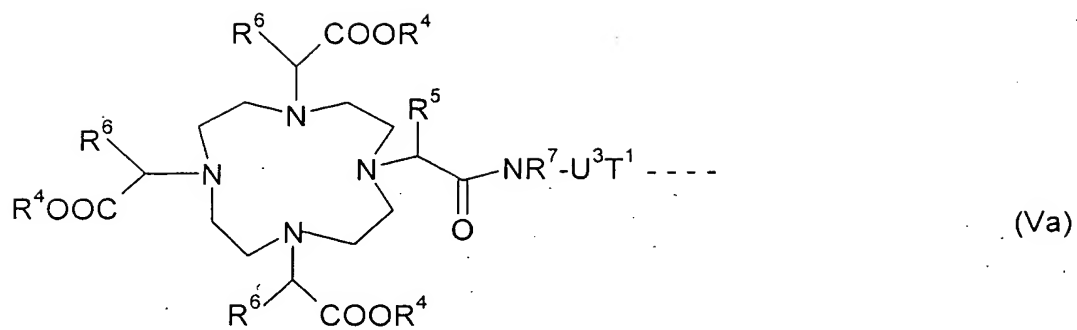
γ binds to D, and δ binds to R^F.

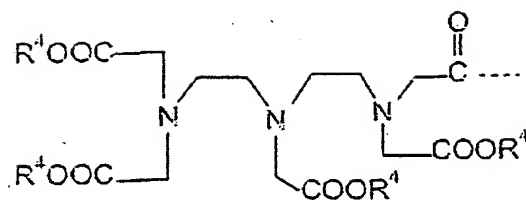
Claim 15 (currently amended): Use A method according to claim 12, wherein in the compounds of general formula Ia, ~~in which~~ V is a molecule part with one of the following structures



are used.

Claim 16 (withdrawn and currently amended): Use A method according to claim 12, wherein in the compounds of general formula Ia, ~~in which~~ K represents a complex of general formula Va, VIa, VIIa or VIIIa,





(VIIIa)

are used,

whereby wherein

- R^4 , independently of one another, are a hydrogen atom or a metal ion equivalent of the elements of atomic numbers 23-29, 42-46 or 58-70,
- R^5 is a hydrogen atom or a straight-chain, branched, saturated or unsaturated C_1 - C_{30} alkyl chain, which optionally is substituted by 1-5 hydroxy, 1-3 carboxy or 1 phenyl group(s) and/or optionally is interrupted by 1-10 oxygen atoms, 1 phenylene group or 1 phenylenoxy group,
- R^6 is a hydrogen atom, a straight-chain or branched C_1 - C_7 alkyl radical, a phenyl radical or benzyl radical,
- R^7 is a hydrogen atom, a methyl group or ethyl group, which optionally is substituted by a hydroxy group or carboxy group,
- U^3 is a straight-chain, branched, saturated or unsaturated C_1 - C_{20} alkylene group optionally containing 1-5 imino groups, 1-3 phenylene groups, 1-3 phenylenoxy groups, 1-3 phenylenimino groups, 1-5 amide groups, 1-2 hydrazide groups, 1-5 carbonyl groups, 1-5 ethylenoxy groups, 1 urea group, 1 thiourea group, 1-2 carboxyalkylimino groups, 1-2 ester groups, 1-1-0 oxygen atoms, 1-5 sulfur atoms and/or 1-5 nitrogen atoms, and/or optionally substituted by 1-5 hydroxy groups, 1-

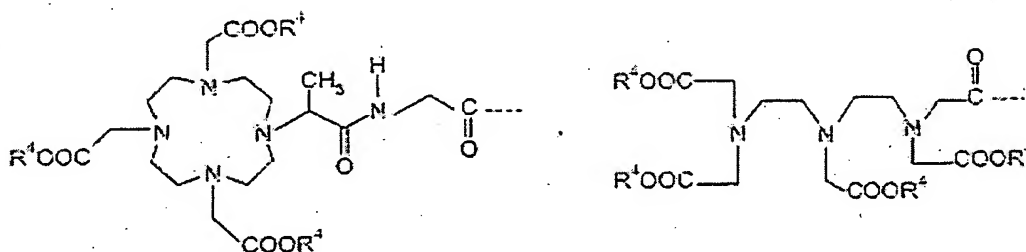
2 mercapto groups, 1-5 oxo groups, 1-5 thioxo groups, 1-3 carboxy groups, 1-5 carboxyalkyl groups, 1-5 ester groups and/or 1-3 amino groups, whereby wherein the optionally contained phenylene groups can be substituted by 1-2 carboxy groups, 1-2 sulfone groups or 1-2 hydroxy groups

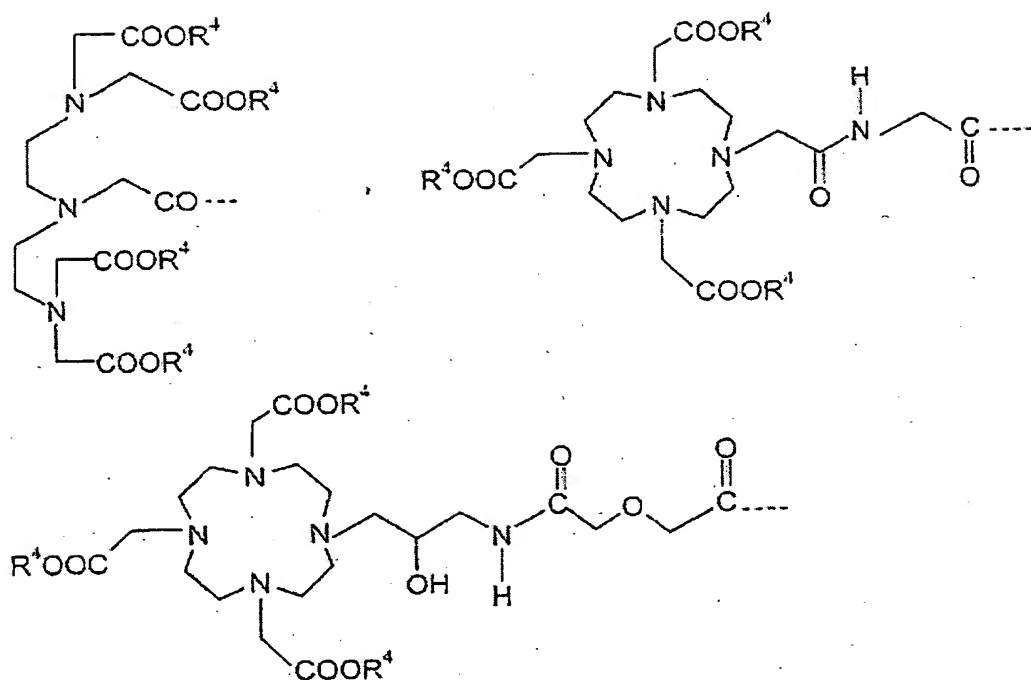
- T¹ stands for a -CO-β, -NHCO-β or -NHCS-β group, whereby wherein β represents the binding site to V.

Claim 17 (withdrawn and currently amended): Use A method according to claim 16, wherein the C₁-C₂₀-alkylene chain that stands or U³ contains the groups -CH₂NHCO-, -NHCOCH₂O-, -NHCOCH₂OC₆H₄-, -N(CH₂CO₂H)-, -CH₂OCH₂-, -NHCOCH₂C₆H₄-, -NHCSNHC₆H₄-, -CH₂OC₆H₄-, -CH₂CH₂O- and/or is substituted by the groups -COOH and -CH₂COOH.

Claim 18 (withdrawn and currently amended): Use A method according to claim 16, wherein U³ stands for a -CH₂-, -CH₂CH₂-, -CH₂CH₂CH₂-, -C₆H₄-, -C₆H₁₀-, -CH₂C₆H₄-, -CH₂NHCOCH₂CH(CH₂CO₂H)-C₆H₄-, -CH₂NHCOCH₂OCH₂-, or -CH₂NHCOCH₂C₆H₄- group.

Claim 19 (withdrawn and currently amended): Use A method according to claim 12, wherein in the compounds of general formula Ia, ~~in which~~ K has one of the following structures:



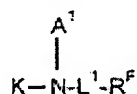


are used.

Claim 20 (withdrawn): Use A method according to claim 12, wherein in the compounds of general formula Ia, ~~in which~~ the perfluoroalkyl chain R^F is $-C_6F_{13}$, $-C_8F_{17}$, $-C_{10}F_{21}$ or $-C_{12}F_{25}$ are used.

Claim 21 (withdrawn): Use A method according to claim 12, wherein the gadolinium complex of 1,4,7-tris{1,4,7-tris(N-(carboxylatomethyl)-10-[N-1-methyl-3,6-diaza-2,5,8-trioxooctane-1,8-diyl)]-1,4,7,10-tetraazacyclododecane, Gd complex}-10-[N-2H,2H,4H,4H,5H,5H-3-oxa-perfluorotridecanoyl]-1,4,7,10-tetraazacyclododecane is used.

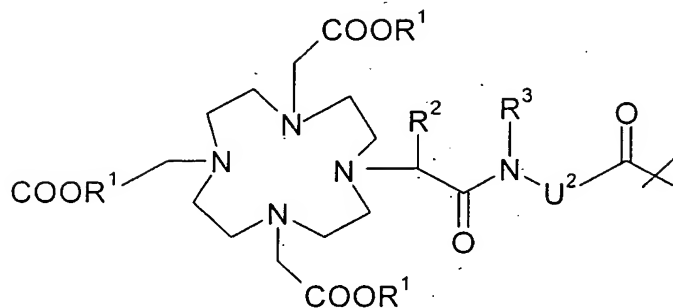
Claim 22 (withdrawn): Use A method according to claim 1, wherein as the perfluoroalkyl-containing metal complexes, ~~the compounds of general~~ are of formula Ib



(Ib)

in which

K means a complexing agent or a metal complex of general formula IIb



(IIb)

~~whereby~~ wherein

R¹ stands for a hydrogen atom or a metal ion equivalent of atomic numbers 23-29, 42-46 or 58-70,

R² and R³ stand for a hydrogen atom, a C₁-C₇-alkyl group, a benzyl group, a phenyl group, -CH₂OH or -CH₂-OCH₃,

U² stands for radical L¹, ~~whereby~~ wherein L¹ and U², independently of one another, can be the same or different, however,

A¹ means a hydrogen atom, a straight-chain or branched C₁-C₃₀ alkyl group, which optionally is interrupted by 1-15 oxygen atoms, and/or optionally is substituted with 1-10 hydroxy groups, 1-2 COOH groups, a phenyl group, a benzyl group and/or 1-5 -OR⁹ groups, with R⁹ in the meaning of a hydrogen atom or a C₁-C₇ alkyl radical, or -L¹-R^F,

L¹ means a straight-chain or branched C₁-C₃₀-alkylene group, which optionally is interrupted by 1-10 oxygen atoms, 1-5 -NH-CO groups, 1-5 -CO-NH groups, by a phenylene group optionally substituted by a COOH- group, 1-3 sulfur atoms, 1-2 -N(B¹)-SO₂ groups and/or 1-2 -SO₂-N(B¹)-groups with B¹ in the meaning of A¹, and/or optionally is substituted with radical R^F, and

R^F means a straight-chain or branched perfluorinated alkyl radical of formula $C_nF_{2n}E$,
whereby wherein n stands for numbers 4-30, and

E stands for a terminal fluorine atom, chlorine atom, bromine atom,
iodine atom or a hydrogen atom,

and optionally present acid groups optionally can be present as salts of organic and/or inorganic
bases or amino acids or amino acid amides, ~~are used.~~

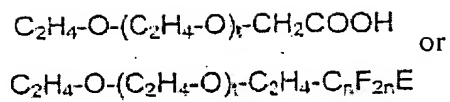
Claim 23 (withdrawn and currently amended): ~~Use~~ A method according to claim 22,
wherein in the compounds of general formula Ib, ~~in which~~ R^2 , R^3 and R^9 , independently of one
another, mean hydrogen or a C_1 - C_4 alkyl group, ~~are used.~~

Claim 24 (withdrawn and currently amended): ~~Use~~ A method according to claim 22,
wherein in the compounds of general formula Ib, ~~in which~~ A^1 means hydrogen, a C_1 - C_{15} alkyl
radical, or one of

the radicals

$C_2H_4-O-CH_3$, $C_3H_5-O-CH_3$,
 $C_2H_4-O-(C_2H_4-O)_1-C_2H_4-OH$,
 $C_2H_4-O-(C_2H_4-O)_1-C_2H_4-OCH_3$,
 C_2H_4OH , C_3H_5OH , C_4H_8OH , $C_5H_{10}OH$, $C_6H_{12}OH$, $C_7H_{14}OH$,
 $CH(OH)CH_2OH$,
 $CH(OH)CH(OH)CH_2OH$, $CH_2[CH(OH)]_uCH_2OH$,
 $CH[CH_2(OH)]CH(OH)CH_2OH$,
 $C_2H_4CH(OH)CH_2OH$,
 $(CH_2)_5COOH$,

or



whereby wherein

s stands for integers 1 to 15,

t stands for integers 0 to 13,

u¹ stands for integers 1 to 10,

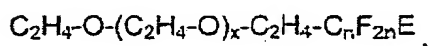
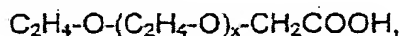
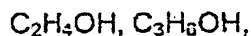
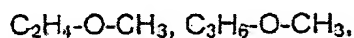
n stands for integers 4 to 20, and

E stands for hydrogen, fluorine, chlorine, bromine or iodine atoms, and if necessary,

their

or a branched isomers, are used isomer thereof.

Claim 25 (withdrawn and currently amended): Use A method according to claim 22, wherein in the compounds of general formula Ib, in which A¹ means hydrogen, C₁-C₁₀ alkyl, or one of the following



whereby wherein

x stands for integers 0 to 5,

y stands for integers 1 to 6,

w stands for integers 1 to 10,

n stands for integers 4 to 15, and

E stands for a fluorine atom, and, if necessary, their

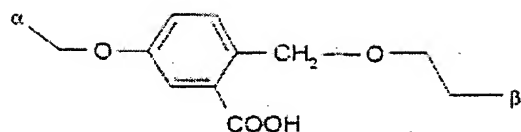
or a branched isomers are used isomer thereof.

Claim 26 (withdrawn and currently amended): Use A method according to claim 22,
 wherein in the compounds of general formula Ib, ~~in which~~ L^1 means one of the following

$\alpha-(CH_2)_5-\beta$
 $\alpha-CH_2-CH_2-(O-CH_2-CH_2-)_y-\beta$
 $\alpha-CH_2-(O-CH_2-CH_2-)_y-\beta$,
 $\alpha-CH_2-NH-CO-\beta$
 $\alpha-CH_2-CH_2-NH-SO_2-\beta$
 $\alpha-CH_2-NH-CO-CH_2-N(CH_2COOH)-SO_2-\beta$
 $\alpha-CH_2-NH-CO-CH_2-N(C_2H_5)-SO_2-\beta$
 $\alpha-CH_2-NH-CO-CH_2-N(C_{10}H_{21})-SO_2-\beta$
 $\alpha-CH_2-NH-CO-CH_2-N(C_6H_{13})-SO_2-\beta$
 $\alpha-CH_2-NH-CO-(CH_2)_{10}-N(C_2H_5)-SO_2-\beta$
 $\alpha-CH_2-NH-CO-CH_2-N(-CH_2-C_6H_5)-SO_2-\beta$
 $\alpha-CH_2-NH-CO-CH_2-N(-CH_2-CH_2-OH)SO_2-\beta$
 $\alpha-CH_2-NHCO-(CH_2)_{10}-S-CH_2CH_2-\beta$
 $\alpha-CH_2NHCOCH_2-O-CH_2CH_2-\beta$
 $\alpha-CH_2-CH_2NHCOCH_2-O-CH_2CH_2-\beta$
 $\alpha-CH_2-(CH_2-CH_2-O)_t-(CH_2)_3NHCO-CH_2-O-CH_2CH_2-\beta$
 $\alpha-CH_2NHCO(CH_2)_{10}-O-CH_2CH_2-\beta$
 $\alpha-CH_2CH_2NHCO(CH_2)_{10}-O-CH_2CH_2-\beta$
 $\alpha-CH_2-C_6H_4-O-CH_2CH_2-\beta$,

whereby wherein phenylene group 1,4 or 1,3 is linked

$\alpha-CH_2-O-CH_2-C(CH_2OCH_2CH_2-C_6F_{13})_2-CH_2-OCH_2-CH_2-\beta$
 $\alpha-CH_2-NHCOCH_2CH_2CON-CH_2CH_2NHCOCH_2N(C_2H_5)SO_2C_8F_{17}\beta$
 $\alpha-CH_2-CH_2NHCOCH_2N(C_2H_5)-SO_2-\beta$
 $\alpha-CH_2-O-CH_2-CH(OC_{10}H_{21})-CH_2-O-CH_2CH_2-\beta$
 $\alpha-(CH_2NHCO)_4-CH_2O-CH_2CH_2-\beta$
 $\alpha-(CH_2NHCO)_3-CH_2O-CH_2CH_2-\beta$
 $\alpha-CH_2-OCH_2C(CH_2OH)_2-CH_2-O-CH_2CH_2-\beta$



α -CH₂NHCOCH₂N(C₆H₅)-SO₂- β
 α -NHCO-CH₂-CH₂- β
 α -NHCO-CH₂-O-CH₂CH₂- β
 α -NH-CO- β
 α -NH-CO-CH₂-N(CH₂COOH)-SO₂- β
 α -NH-CO-CH₂-N(C₂H₅)-SO₂- β
 α -NH-CO-CH₂-N(C₁₀H₂₁)-SO₂- β
 α -NH-CO-CH₂-N(C₆H₁₃)-SO₂- β
 α -NH-CO-(CH₂)₁₀-N(C₂H₅)-SO₂- β
 α -NH-CO-CH₂-N(-CH₂-C₆H₅)-SO₂- β
 α -NH-CO-CH₂-N(-CH₂-CH₂-OH)-SO₂- β
 α -NH-CO-CH₂- β
 α -CH₂-O-C₆H₄-O-CH₂-CH₂- β
 α -CH₂-C₆H₄-O-CH₂-CH₂- β
 α -N(C₂H₅)-SO₂- β
 α -N(C₆H₅)-SO₂- β
 α -N(C₁₀H₂₁)-SO₂- β
 α -N(C₆H₁₃)-SO₂- β
 α -N(C₂H₄OH)-SO₂- β
 α -N(CH₂COOH)-SO₂- β
 α -N(CH₂C₆H₅)-SO₂- β
 α -N-[CH(CH₂OH)₂]-SO₂- β
 α -N-[CH(CH₂OH)CH(OH)(CH₂OH)]-SO₂- β

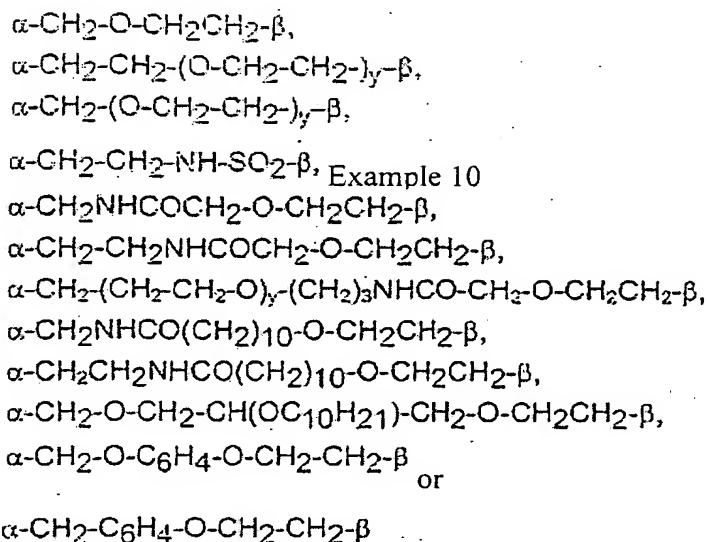
whereby wherein

s stands for integers 1 to 15 and

y stands for integers 1 to 6;

are used.

Claim 27 (withdrawn and currently amended): Use A method according to claim 22, wherein in the compounds of general formula Ib, ~~in which~~ L^1 means one of the following



or

whereby wherein

y stands for integers 1 to 6, ~~are used.~~

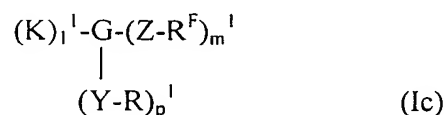
Claim 28 (withdrawn and currently amended): Use A method according to claim 22, wherein in the compounds of general formula Ib, ~~in which~~ R^F means a straight-chain or branched perfluorinated alkyl radical of formula $C_nF_{2n}E$, ~~whereby~~ wherein n stands for numbers 4 to 15 and E stands for a terminal fluorine atom, ~~are used.~~

Claim 29 (withdrawn and currently amended): Use A method according to claim 22, wherein one of the following compounds complexes are used:

- 1,4,7-Tris(carboxylatomethyl)-10-(3-aza-4-oxo-hexan-5-yl)-acid-(2,3-dihydroxypropyl)-N-(1H,1H,2H,2H,4H,4H,5H,5H-3-oxa)-perfluorotridecyl)-amide]-1,4,7,10-tetraazacyclododecane, gadolinium complex
- 1,4,7-Tris(carboxylatomethyl)-10-[(3-aza-4-oxo-hexan-5-yl)acid-N-

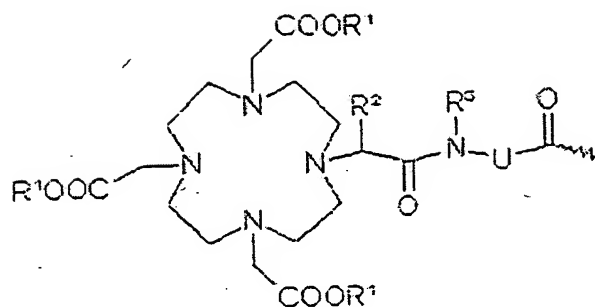
- (3,6,9,12,15-pentaoxa)-hexadecyl)-(1H,1H,2H,2H,4H,4H,5H,5H-3-oxa)-perfluorotridecyl]-amide}-1,4,7,10-tetraazacyclododecane, gadolinium complex
- 1,4,7-Tris(carboxylatomethyl)-10-{(3-aza-4-oxo-hexan-5-ylidene)-acid-N-5-hydroxy-3-oxa-pentyl)-N-(1H,1H,2H,2H,4H,4H,5H,5H-3-oxa)-perfluorotridecyl]-amide}-1,4,7,10-tetraazacyclododecane, gadolinium complex
- 1,4,7-Tris(carboxylatomethyl)-10-{(3-aza-4-oxo-hexan-5-ylidene)-acid-[N-3,6,9,15-tetraoxa-12-aza-15-oxo-C₁₇-C₂₆-hepta-decafluoro)hexacosyl]-amide}-1,4,7,10-tetraazacyclododecane, gadolinium complex
- 1,4,7-Tris(carboxylatomethyl)-10-[(3-aza-4-oxo-hexan-5-ylidene)-acid-N-(2-methoxyethyl)-N-(1H,1H,2H,2H,4H,4H,5H,5H-3-oxa)-perfluorotridecyl]-amide}-1,4,7,10-tetraazacyclododecane, gadolinium complex.

Claim 30 (currently amended): Use A method according to claim 1, wherein as the perfluoroalkyl-containing metal complexes, ~~the compounds with sugar radicals of general~~ are of formula Ic



in which

- R represents a mono-or oligosaccharide radical bonded by the 1-OH- or 1-SH-position,
- R^F is a perfluorinated, straight-chain or branched carbon chain with the formula -C_nF_{2n}E, in which E represents a terminal fluorine, chlorine, bromine, iodine or hydrogen atom, and n stands for numbers 4-30,
- K stands for a metal complex of general formula IIc,



(IIc)

in which

R¹ means a hydrogen atom or a metal ion equivalent of atomic numbers 23-29, 42-46 or 58-70,

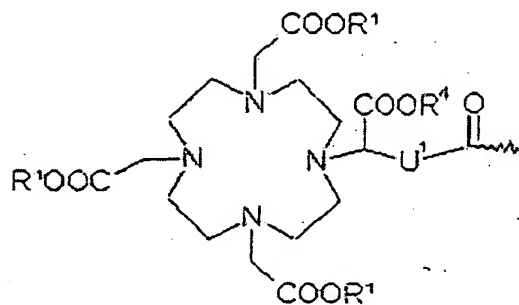
provided that at least two R¹ stand for metal ion equivalents,

R² and R³, independently of one another, represent hydrogen, C₁-C₇-alkyl, benzyl, phenyl, -CH₂OH or -CH₂OCH₃, and

U represents -C₆H₄-O-CH₂-ω, -(CH₂)_{1.5}-ω, a phenylene group, -CH₂-NHCO-CH₂-CH(CH₂COOH)-C₆H₄-ω, -C₆H₄-(OCH₂CH₂)_{0.1}-N(CH₂COOH)-CH₂-ω, or a C₁-C₁₂-alkylene group or C₇-C₁₂-C₆H₄-O group optionally interrupted by one or more oxygen atoms, 1 to 3 -NHCO groups or 1 to 3 -CONH groups and/or substituted with 1 to 3 -(CH₂)_{0.5} COOH groups, whereby wherein ω stands for the binding site to
-CO-,

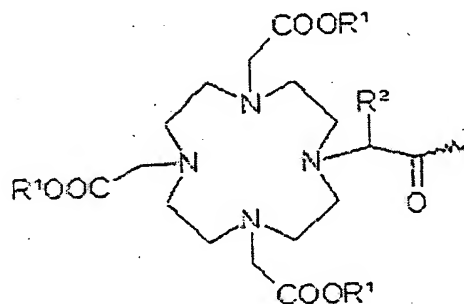
or

of general formula IIIc



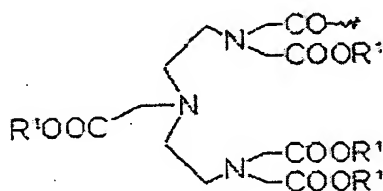
(IIIc)

in which R^1 has the above-mentioned meaning, R^4 represents hydrogen or a metal ion equivalent mentioned under R^1 , and U^1 represents $-C_6H_4-O-CH_2-\omega$, whereby wherein ω means the binding site to $-CO-$,
or of general formula IVc

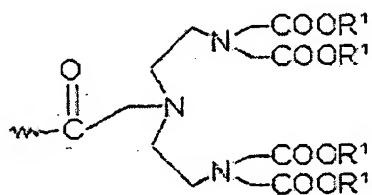


(IVc)

in which R^1 and R^2 have the above-mentioned meaning
or of general formula VcA or VcB



(VcA)



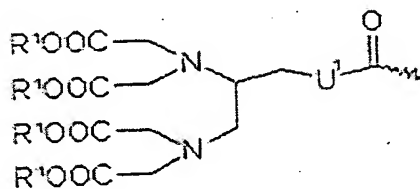
(VcB)

in which R¹ has the above-mentioned meaning,
or of general formula VIc



(VIc)

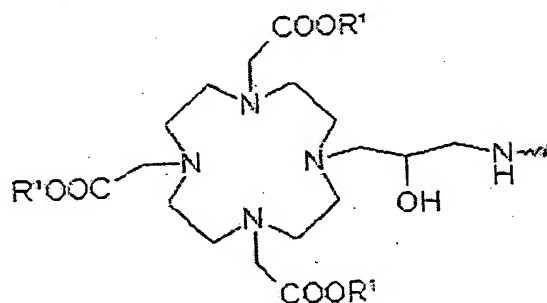
in which R¹ has the above-mentioned meaning,
or of general formula VIIc



(VIIc)

in which R¹ has the above-mentioned meaning, and

U¹ represents -C₆H₄-O-CH₂-ω, whereby wherein ω means the binding site to -CO-
or of general formula VIIIc



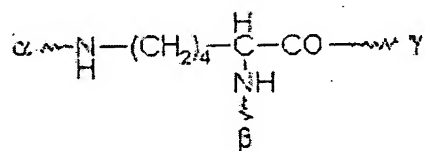
(VIIIc)

in which R¹ has the above-mentioned meaning,

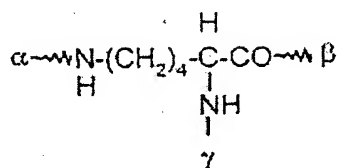
and in radical K, optionally present free acid groups optionally can be present as salts of organic and/or inorganic bases or amino acids or amino acid amides,

G for the case that K means a metal complexes complex of IIc to VIIc, represents a radical that is functionalized in at least three places and is selected from the following radicals a) to j)

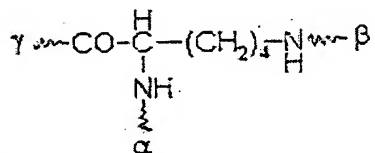
(a1)



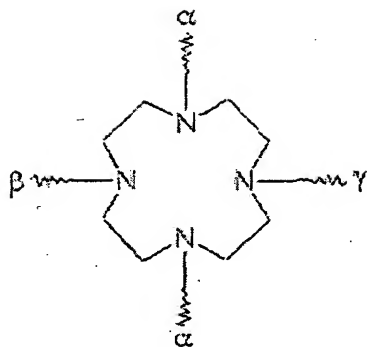
(a2)



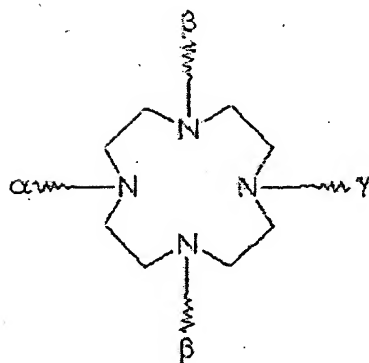
(b)



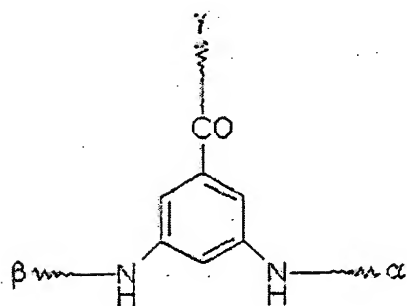
(c)



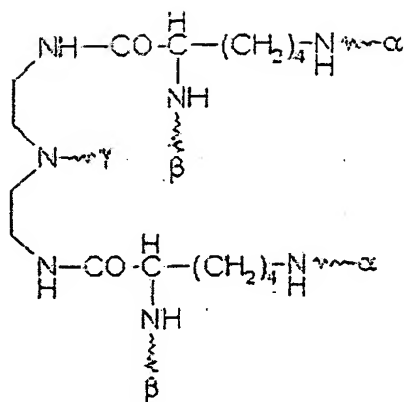
(d)



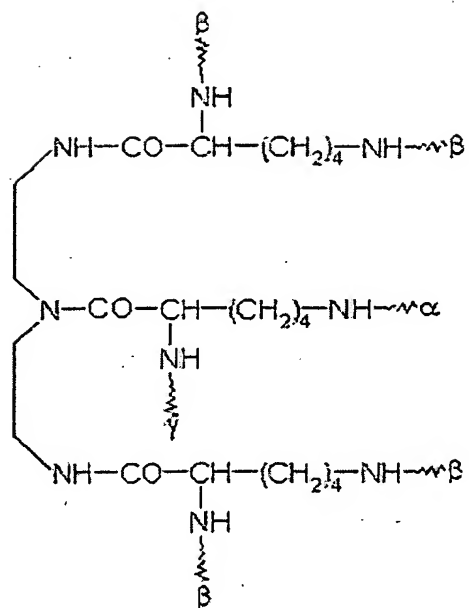
(e)



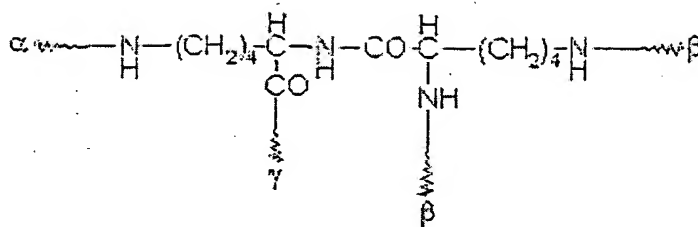
(f)



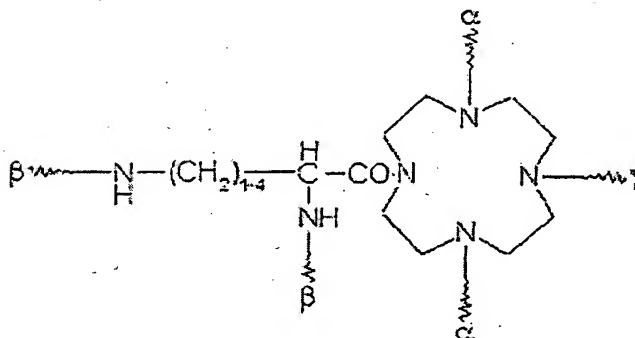
(g)



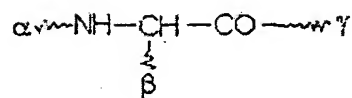
(h)



(i)



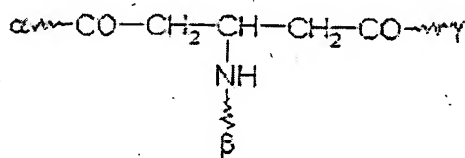
(j)



and

G for the case that K means a metal complex VIIIc₁ represents a radical that is functionalized in at least three places and is selected from k) or l),

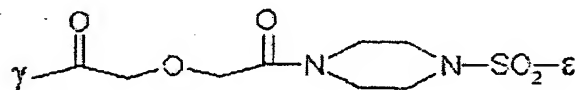
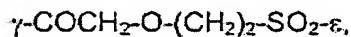
(l)



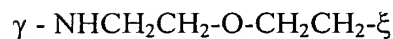
~~whereby~~ wherein α means the binding site of G to complex K, β is the binding site of G to radical Y, and γ represents the binding site of G to radical Z,

Y means $-\text{CH}_2$, $\delta-(\text{CH}_2)_{(1-5)}\text{CO}-\beta$, $\beta-(\text{CH}_2)_{(1-5)}\text{CO}-\delta$, $\delta-\text{CH}_2-\text{CHOH}-\text{CO}-\beta$ or $\delta-\text{CH}(\text{CHOH}-\text{CH}_2\text{OH})-\text{CHOH}-\text{CHOH}-\text{CO}-\beta$, ~~whereby~~ wherein δ represents the binding site to sugar radical R and β is the binding site to radical G,

Z stands for



or



~~whereby~~ wherein γ represents the binding site of Z to radical G, and ξ means the binding

site of Z to perfluorinated radical R^{F}

and

l^1 , m^1 , independently of one another, mean integers 1 or 2, and

p^1 means integers 1 to 4, ~~are used.~~

Claim 31 (currently amended): ~~Use~~ A method according to claim 30, wherein in the compounds of general formula Ic, ~~in which~~ R represents a monosaccharide radical with 5 to 6 C atoms or its deoxy compound, ~~preferably or is~~ glucose, mannose or galactose, ~~are used.~~

Claim 32 (currently amended): ~~Use~~ A method according to claim 30, wherein in the compounds of general formula Ic, ~~in which~~ R^2 and R^3 , independently of one another, mean hydrogen or C_1 - C_4 alkyl and/or E in formula $-C_nF_{2n}E$ means a fluorine atom, ~~are used.~~

Claim 33 (currently amended): ~~Use~~ A method according to claim 30, wherein in the compounds of general formula Ic, ~~in which~~ G represents lysine radical (a) or (b), ~~are used.~~

Claim 34 (currently amended): ~~Use~~ A method according to claim 30, wherein in the compounds of general formula Ic, ~~are used, in which~~ Z means



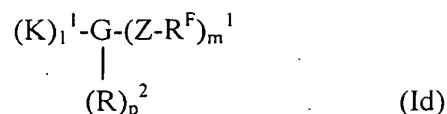
~~whereby~~ wherein γ represents the binding site of Z to radical G, and ξ means the binding site of Z to perfluorinated radical R^F , and/or Y means δ - $CH_2CO\beta$, ~~whereby~~ wherein δ represents the binding site to sugar radical R and β represents the binding site to radical G.

Claim 35 (currently amended): ~~Use~~ A method according to claim 30, wherein in the compounds of general formula Ic, ~~are used, in which~~ U in metal complex K represents $-CH_2-$ or $-C_6H_4-O-CH_2-\omega$, ~~whereby~~ wherein ω stands for the binding site to $-CO-$.

Claim 36 (currently amended): ~~Use~~ A method according to claim 30, wherein the gadolinium complex of 6-N-[1,4,7-tris(carboxylatomethyl)-1,4,7,10-tetraazacyclododecane-10-N-(pentanoyl-3-aza-4-oxo-5-methyl-5-yl)]-2-N-[1-O- α -D-carbonylmethyl-mannopyranose]-L-lysine-[1-(4-perfluorooctylsulfonyl)-piperazine]-amide is used.

Claim 37 (withdrawn and currently amended): ~~Use~~ A method according to claim 1, wherein as the perfluoroalkyl-containing metal complexes, ~~the compounds with polar radicals of~~

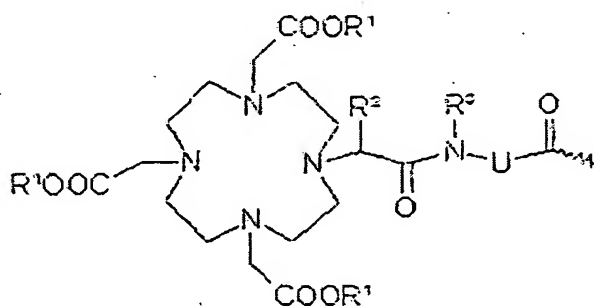
general are of formula Id



in which

R^F is a perfluorinated, straight-chain or branched carbon chain with formula $-C_nF_{2n}E$, in which E represents a terminal fluorine, chlorine, bromine, iodine or hydrogen atom, and n stands for numbers 4-30,

K stands for a metal complex of general formula IId,



(IId)

in which

R^1 means a hydrogen atom or a metal ion equivalent of atomic numbers 23-29, 42-46 or 58-70,

provided that at least two R^1 stand for metal ion equivalents,

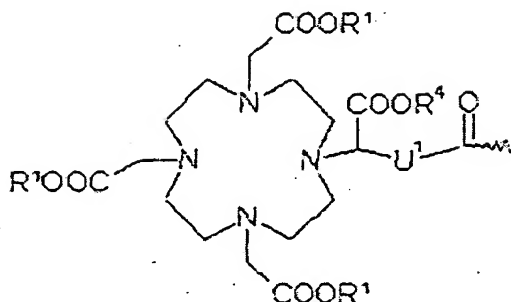
R^2 and R^3 , independently of one another; represent hydrogen, C_1 - C_7 alkyl, benzyl, phenyl, $-CH_2OH$ or $-CH_2OCH_3$, and

U represents $-C_6H_4-O-CH_2-\omega-$, $-(CH_2)_{1.5}-\omega$, a phenylene group, $-CH_2-NHCO-CH_2-CH(CH_2COOH)-C_6H_4-\omega-$, $-C_6H_4-(OCH_2CH_2)_{0.1}-N(CH_2COOH)-CH_2-\omega$, or a C_1 - C_{12} alkylene group or C_7 - C_{12} - C_6H_4-O group optionally interrupted by one or more oxygen atoms, 1 to 3 $-NHCO$ groups, 1 to 3 $-CONH$ groups and/or substituted

with 1 to 3 $-(CH_2)_{0-5}COOH$ groups, whereby wherein ω stands for the binding site to $-CO-$,

or

of general formula IIIId



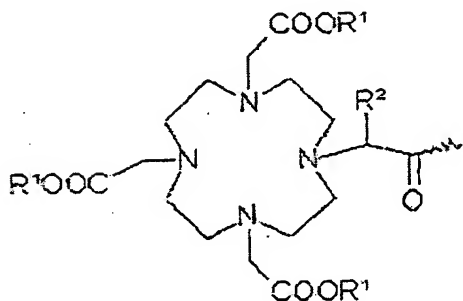
(IIIId)

in which R^1 has the above-mentioned meaning, R^4 represents hydrogen or a metal ion equivalent mentioned under R^1 , and U^1 represents $-C_6H_4-O-CH_2-\omega-$, whereby wherein ω means the binding site to

$-CO-$,

or

of general formula IVd



(IVd)

in which R^1 and R^2 have the above-mentioned meaning,

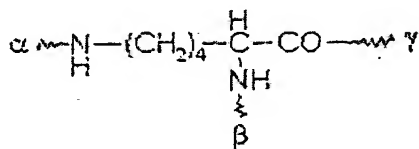
or of general formula VdA or VdB

in which R¹ has the above-mentioned meaning, and

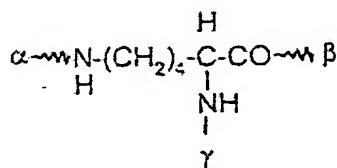
U¹ represents -C₆H₄-O-CH₂-ω-, whereby wherein ω means the binding site to -CO-, and in radical K, optionally present free acid groups optionally can be present as salts of organic and/or inorganic bases or amino acids or amino acid amides,

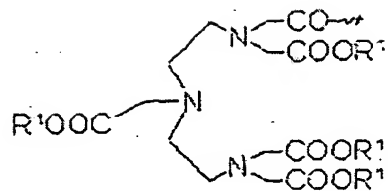
G represents a radical that is functionalized in at least three places and is selected from the following radicals a) to g)

(a1)

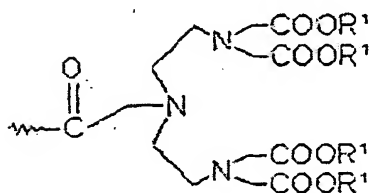


(a2)



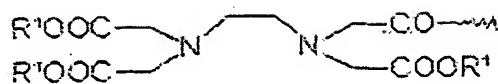


(VdA)



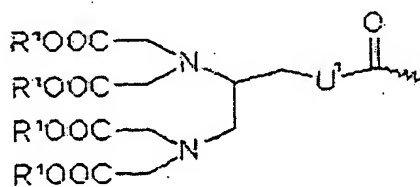
(VdB)

in which R^1 has the above-mentioned meaning,
or of general formula VIId



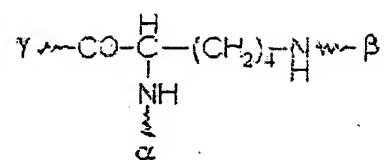
(VIId)

in which R^1 has the above-mentioned meaning,
or of general formula VIId

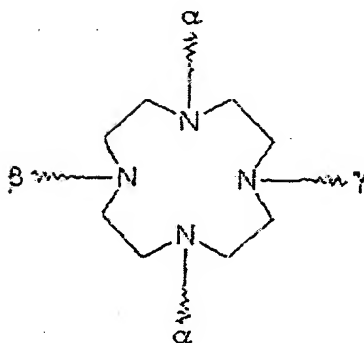


(VIId)

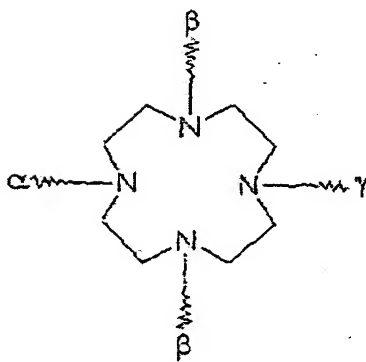
(b)



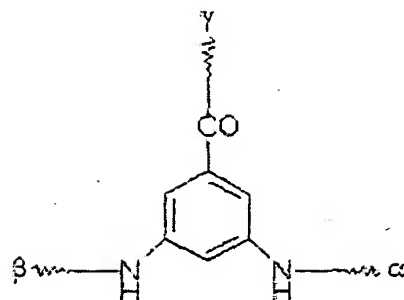
(c)



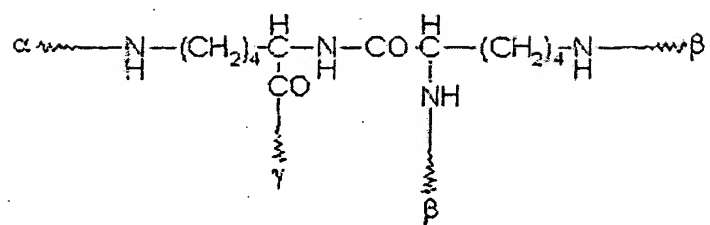
(d)



(e)



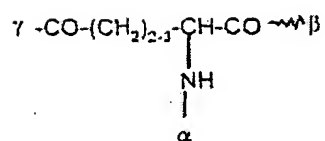
(f)



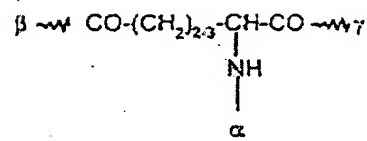
(g)



(h)



(i)



whereby wherein α means the binding site of G to complex K, β is the binding site of G to radical R, and γ represents the binding site of G to radical Z

Z stands for



whereby wherein γ represents the binding site of Z to radical G and ξ means the binding site of Z to perfluorinated radical R_f ,

R represents a polar radical that is selected from complexes K of general formulas IIId to VIId, whereby wherein R^1 here means a hydrogen atom or a metal ion equivalent of atomic numbers 20, 23-29, 42-46 or 58-70, and radicals R^2 , R^3 , R^4 , U and U^1 have the above-indicated meaning,

or

means the folic acid radical

or

means a carbon chain with 2-30 C atoms that is bonded to radical G via -CO- or SO_2 - or a direct bond to radical G, and is straight or branched, saturated or unsaturated, optionally interrupted by 1-10 oxygen atoms, 1-5 -NHCO groups, 1-5 -CONH groups, 1-2 sulfur atoms, 1-5 -NH groups or 1-2 phenylene groups, which optionally can be substituted with 1-2 OH groups, 1-2 NH_2 groups, 1-2 -COOH groups, or 1-2 - SO_3H groups,

or

optionally substituted with 1-8 OH groups, 1-5 -COOH groups, 1-2 SO_3H groups, 1-5 NH_2 groups, or 1-5 C_1 - C_4 alkoxy groups, and

l^1 , m^1 , p^2 , independently of one another, mean integers 1 or 2, ~~are used.~~

Claim 38 (withdrawn and currently amended): Use A method according to claim 37, wherein in the compounds of general formula Id, ~~in which~~ K stands for a metal complex of general formula IId, IIId, VdB or VIId, ~~are used~~.

Claim 39 (withdrawn and currently amended): Use A method according to claim 37, wherein in the compounds of general formula Id, ~~in which~~ polar radical R has the meaning of complex K, ~~preferably complex K of general formulas IId, IIId, VdA or VIId, are used~~.

Claim 40 (withdrawn and currently amended): Use A method according to claim 37, wherein in the compounds of general formula Id, ~~in which~~ polar radical R has one of the following meanings:

- C(O)CH₂CH₂SO₃H
- C(O)CH₂OCH₂CH₂OCH₂CH₂OH
- C(O)CH₂OCH₂CH₂OH
- C(O)CH₂OCH₂CH(OH)CH₂OH
- C(O)CH₂NH-C(O)CH₂COOH
- C(O)CH₂CH(OH)CH₂OH
- C(O)CH₂OCH₂COOH
- SO₂CH₂CH₂COOH
- C(O)-C₆H₃-(m-COOH)₂
- C(O)CH₂O(CH₂)₂-C₆H₃-(m-COOH)₂
- C(O)CH₂O-C₆H₄-m-SO₃H
- C(O)CH₂NHC(O)CH₂NHC(O)CH₂OCH₂COOH
- C(O)CH₂OCH₂CH₂OCH₂COOH
- C(O)CH₂OCH₂CH(OH)CH₂O-CH₂CH₂OH
- C(O)CH₂OCH₂CH(OH)CH₂OCH₂-CH(OH)-CH₂OH
- C(O)CH₂SO₃H
- C(O)CH₂CH₂COOH
- C(O)CH(OH)CH(OH)CH₂OH
- C(O)CH₂O[(CH₂)₂O]₁₋₉-CH₃
- C(O)CH₂O[(CH₂)₂O]₁₋₉-H
- C(O)CH₂OCH(CH₂OH)₂
- C(O)CH₂OCH(CH₂OCH₂COOH)₂
- C(O)-C₆H₃-(m-OCH₂COOH)₂

-CO-CH₂O-(CH₂)₂O(CH₂)₂O-(CH₂)₂O(CH₂)₂OCH₃
preferably -C(O)CH₂O[(CH₂)₂O]₄-CH₃

are used.

Claim 41 (withdrawn and currently amended): Use A method according to claim 37, wherein in the compounds of general formula Id, ~~in which~~ polar radical R is the folic acid radical, ~~are used.~~

Claim 42 (withdrawn and currently amended): Use A method according to claim 37, wherein in the compounds of general formula Id, ~~in which~~ G represents lysine radical (a) or (b), ~~are used.~~

Claim 43 (withdrawn and currently amended): Use A method according to claim 37, wherein in the compounds of general formula Id, ~~in which~~ U represents group -CH₂- or -C₆H₄-O-CH₂-ω in metal complex K, ~~whereby~~ wherein ω stands for the binding site to -CO-, ~~are used.~~

Claim 44 (withdrawn and currently amended): Use A method according to claim 37, wherein the gadolinium complex of 2,6-N,N'-bis[1,4,7-tris(carboxylatomethyl)-1,4,7,10-tetraazacyclododecane-10-(pentanoyl-3-aza-4-oxo-5-methyl-5-yl)]-lysine-[1-(4-perfluorooctylsulfonyl-piperazine)]-amide is used.

Claim 45 (currently amended): Use A method according to ~~claim 1~~ claim 12, wherein as the perfluoroalkyl-containing metal complexes, are galenical formulations that contain paramagnetic, perfluoroalkyl-containing metal complexes of general formulas I, Ia, Ib, Ic and/or

~~Id formula Ia~~ and diamagnetic perfluoroalkyl-containing substances, ~~preferably optionally~~ dissolved in an aqueous solvent, ~~are used~~.

Claim 46 (currently amended): ~~Use A method~~ according to claim 45, wherein ~~as the~~ diamagnetic perfluoroalkyl-containing substances, ~~these of general~~ are of formula XX



in which R^F represents a straight-chain or branched perfluoroalkyl radical with 4 to 30 carbon atoms, L^2 stands for a linker and B^2 stands for a hydrophilic group, ~~are used~~.

Claim 47 (currently amended): ~~Use A method~~ according to claim 46, wherein linker L^2 is a direct bond, an $-SO_2$ group, or a straight-chain or branched carbon chain with up to 20 carbon atoms, which can be substituted with one or more $-OH$, $-COO^-$, or $-SO_3$ groups and/or optionally contains one or more $-O-$, $-S-$, $-CO-$, $-CONH-$, $-NHCO-$, $-CONR^9-$, $-NR^9CO-$, $-SO_2-$, $-PO_4^-$, $-NH-$ or $-NR^9$ groups, an aryl ring or a piperazine, ~~whereby~~ wherein R^9 stands for a C_1 -to C_{20} -alkyl radical, which in turn can contain one or more O atoms, and/or can be substituted with $-COO^-$ or SO_3 groups.

Claim 48 (currently amended): ~~Use A method~~ according to claim 46, wherein hydrophilic group B^2 is a mono- or disaccharide, one or more adjacent $-COO^-$ or $-SO_3$ groups, a dicarboxylic acid, an isophthalic acid, a picolinic acid, a benzenesulfonic acid, a tetrahydropyrandicarboxylic acid, a 2,6-pyridinedicarboxylic acid, a quaternary ammonium ion, an aminopolycarboxylic acid, an aminodipolyethylene glycolsulfonic acid, an aminopolyethylene glycol group, an $SO_2-(CH_2)_2-OH$ group, a polyhydroxyalkyl chain with at least two hydroxyl groups or one or more polyethylene glycol chains with at least two glycol units, ~~whereby~~ wherein the polyethylene glycol chains are terminated by an $-OH$ or $-OCH_3$ group.

Claim 49 (currently amended): Use A method according to claim 45, wherein as the diamagnetic perfluoroalkyl-containing substances, are conjugates that consist of α -, β - or γ -cyclodextrin and or compounds of general formula XXII



in which A^2 stands for an adamantane, biphenyl or anthracene molecule, L^3 stands for a linker, and R^F stands for a straight-chain or branched perfluoroalkyl radical with 4 to 30 carbon atoms, and ~~whereby~~ wherein linker L^3 is a straight-chain hydrocarbon chain with 1 to 20 carbon atoms, which can be interrupted by one or more oxygen atoms, one or more $CO-$, SO_2- , $CONH-$, $NHCO-$, $CONR^{10}-$, $NR^{10}CO-$, $NH-$ or NR^{10} groups or a piperazine, ~~whereby~~ wherein R^{10} is a C_1 - C_5 alkyl radical, ~~are used.~~

Claim 50 (currently amended): Use A method according to claim 45, wherein as the diamagnetic perfluoroalkyl-containing substances, ~~those of general~~ are of formula XXI:



in which R^F represents a straight-chain or branched perfluoroalkyl radical with 4 to 30 carbon atoms, and X^1 is a radical that is selected from the group of the following radicals, ~~(n in this case~~ wherein n is a number between 1 and 10), ~~are used:~~

